IN THE SPECIFICATION

Please amend the paragraph beginning at page 1, line 12, as follows:

The present invention relates to a non-invasive subject-information imaging method and apparatus for imaging living body anatomical, functional, and/or metabolic information of a subject to be examined by acquiring acoustic signals generated on the basis of the energy of light radiated into the subject and, more particularly, to a method and apparatus which ~~acquire~~ acquires and ~~superimpose~~ superimposes two acoustic images, one generated from the energy of light radiated into a subject to be examined and the other is an ultrasound echo image generated from ultrasonic waves directed into the subject, and allow an operator to know the distribution of substance concentrations with respect to morphological features in the subject's tissue by superimposing the two images.

Please amend the paragraph beginning at page 3, line 6, as follows:

In addition to glucose and hemoglobin described above, cholesterol, natural fat, bilirubin, collagen, and the like can be used as substances as targets for non-invasive subject-information measurement. Diagnosis of cutaneous cancer or breast cancer by the photoacoustic spectroscopy has recently proven its clinical usefulness. The photoacoustic spectroscopy uses the wavelength of light at which an optimal substance selected from these substances exhibits the highest absorption. In addition, it is increasingly expected that an image diagnosis method be invented, which provides a two-dimensional image representing the concentration distribution of these ~~substance~~ substances.

Please amend the paragraph beginning at page 5, line 2, as follows:

Breast cancer is a major source of mortality in females. Screening for and early diagnosis of breast cancer are of tremendous value in cutting mortality rate and in health care cost containment. Current methods involve manual examination of breast tissue for unusual lumps and routine mammography to look for suspicious lesions. If a mammogram is deemed suspicious, it is followed by ultrasound imaging, and surgical biopsy. ~~These~~ This set of steps ~~take~~ takes considerable time before reaching a final conclusion.

Please amend the paragraph beginning at page 5, line 17, as follows:

Non-invasive optical techniques include time resolved light propagation in tissue. Another method is the measurement of the change in modulation and phase angle as ~~photon density wave propagate~~ a photon-density wave propagates in the tissue. These are presented [[is]] in several journal articles (B. Chance "Near-infrared images using continuous, phase-modulated, and pulsed light with quantitation of blood and blood oxygenation" in Advances in Optical Biopsy and Optical Mammography, R. Alfano ed, Annals of the New York Academy of Sciences 1998; Volume 838: pages 29-45; by S. Fantini et al "Frequency domain optical mammography: Edge effect corrections" Medical Physics 1996; Volume 23: pages 1-6, and by M.A. Franceschini et al "Frequency Domain techniques enhance optical mammography; initial clinical results" Proceedings of the National Academy of Sciences USA 1997; Volume 94: pages 6468 - 6473 (1997)). These methods suffer from imprecision of image conversion and image distortions close to the edges of the body part, such as the breast.

Please amend the paragraph beginning at page 35, line 4, as follows:

In each section, light irradiation and acoustic wave detection are repeated m $\times$ n times in the same operation sequence as that shown in FIG. 8A while the light irradiation position is moved. That is, the optical fibers 71 are selected one by one at predetermined intervals in the array order. As a consequence, the ~~subjected~~ subject is repeatedly irradiated with light while the light irradiation position is moved. The acoustic waves generated in the subject by each light irradiation operation are detected by the four adjacent conversion elements 54 around each light irradiation position within an interval before the next light irradiation operation. The four detected electrical signals are provided with delay times necessary to form a reception convergence point at a position of the depth L immediately below the light irradiation position, and are added.

Please amend the paragraph beginning at page 42, line 2, as follows:

To acquire photoacoustic image data, light beams having different wavelengths may be used determine the content of one substance. How the content of, for example, hemoglobin is measured will be described. As mentioned above, hemoglobin in the living body absorbs light in the range of 600 nm to 1,000 nm. Deoxyhemoglobin absorbs more light having a wavelength near 600 nm than oxyhemoglobin does. On the other hand, ~~the amount of light absorbed by~~ oxyhemoglobin absorbs more light having a wavelength near 1,000 nm than deoxyhemoglobin does. Using this difference in absorption property makes it possible to independently quantify oxyhemoglobin and deoxyhemoglobin in the living body or obtain the total amount of both types of hemoglobin. The above 1,000 nm Nd:YAG laser and a 633 nm He-Ne gas laser may be used, and the measurement results obtained by the respective wavelengths may be identified and displayed in different colors. In this case,

although a photoacoustic image may be superimposed on an ultrasonic image, they may be displayed side by side.

Please amend the paragraph beginning at page 51, line 3, as follows:

The above optical scanning unit 13 moves the light irradiation position by sequentially selecting the plurality of optical fibers 71 arrayed one by one. According to this method, many optical fibers 71 in the waveguide unit 14 and the optical scanning unit 13 which selects them are required. This will complicate the apparatus. In order to improve the problem in the generation of such irradiation light, as shown in FIGS. 17A and 17B, a slit plate 178 is placed parallel to the array surface of the conversion elements 54. A slit is formed almost in the middle of the plate 178 and extends in the array direction of the conversion elements 54. The beam of light passing through the slit has a large width in the array direction of the conversion elements 54, and a small width in the slice direction perpendicular to this array direction. As shown in FIG. 17B, the applicator 70 has a lens [[79]] 179 in addition to the slit plate 78. The lens [[79]] 179 converts the diffused light output from the irradiation unit 15 into a parallel beam. The waveguide unit 14 can directly guide the light supplied to the irradiation unit 15 from the light source unit 11 or optical multiplexing unit 12. Hence, the optical scanning unit 13 is unnecessary. The waveguide unit 14 is not limited to the optical fibers 71, and one channel may be used as long as sufficient power can be obtained.